We claim:

1. An engineered nucleic acid strand comprising a predetermined sequence at a first end thereof, a sequence complementary to the predetermined sequence at the other end thereof, and a hairpin structure therebetween.

2. A library of polypeptides produced by a method comprising the steps of:

a) annealing a primer to a template nucleic acid sequence, the primer having a first portion which anneals to the template and a second portion of predetermined sequence;

b) synthesizing a polynucleotide that anneals to and is complementary to the portion of the template adjacent to the location at which the first portion of the primer anneals to the template, the polynucleotide having a first end and a second end, wherein the first end incorporates the primer;

c) separating the polynucleotide synthesized in step (b) from the template;

d) annealing a nested oligonucleotide to the second end of the polynucleotide synthesized in step (b), the nested oligonucleotide having a first portion that anneals to the second end of the polynucleotide, and a second portion having a hairpin structure;

e) extending the polynucleotide synthesized in step (b) to provide an extended polynucleotide comprising a portion that is complementary to the hairpin structure and a terminal portion that is complementary to the predetermined sequence; and

f) amplifying the extended polynucleotide using a single primer having the predetermined sequence.

3) A library as in claim 2 wherein the polypeptides comprise at least a portion of anitbodies.

4) A library of polypeptides produced by a method comprising the steps of :

a) annealing a primer and a boundary oligonucleotide to a template nucleic acid sequence, the primer having a first portion which anneals to the template and a second portion of predetermined sequence;

b) synthesizing a polynucleotide that anneals to and is complementary to the portion of the template between the location at which the first portion of the primer anneals to the template and the portion of the template to which the boundary

oligonucleotide anneals, the polynucleotide having a first end and a second end, wherein the first end incorporates the primer;

c) separating the polynucleotide synthesized in step (b) from the template;

d) annealing a nested oligonucleotide to the second end of the polynucleotide synthesized in step (b), the nested oligonucleotide having a first portion that anneals to the second end of the polynucleotide and a second portion having a hairpin structure;

e) extending the polynucleotide synthesized in step (b) to provide an extended polynucleotide comprising a portion that is complementary to the hairpin structure and a terminal portion that is complementary to the predetermined sequence; and

f) amplifying the extended polynucleotide using a single primer having the predetermined sequence.

5) A library as in claim 4 wherein the polypeptides comprise at least a portion of antibodies.

6) A library of polypeptides produced by a method comprising the steps of:

a) annealing an oligo dT primer and a boundary oligonucleotide to an mRNA template;

b) synthesizing a polynucleotide that anneals to and is complementary to the portion of the template between the location at which the first portion of the primer anneals to the template and the portion of the template to which the boundary oligonucleotide anneals, the polynucleotide having a first end and a second end, wherein the first end incorporates the primer;

c) separating the polynucleotide synthesized in step (b) from the template;

d) annealing a nested oligonucleotide to the second end of the polynucleotide synthesized in step (b), the nested oligonucleotide having a first portion that anneals to the second end of the polynucleotide, and a second portion having a hairpin structure;

e) extending the polynucleotide synthesized in step (b) to provide an extended polynucleotide comprising a portion that is complementary to the hairpin structure and a poly A terminal portion; and

f) amplifying the extended polynucleotide using a single primer.

7) A library as in claim 6 wherein the polypeptides comprise at least a portion of antibodies.

8) A library of polypeptides produced by a method comprising:

a) annealing a primer to a family of related nucleic acid sequence templates, the primer having a first portion which anneals to the templates and a second portion of predetermined sequence;

b) synthesizing polynucleotides that anneal to and are complementary to the portion of the templates adjacent to the location at which the first portion of the primer anneals to the templates, the polynucleotides having a first end and a second end, wherein the first end incorporates the primer;

c) Separating the polynucleotides synthesized in step (b) from the templates;

d) Annealing a nested oligonucleotide to the second end of the polynucleotides synthesized in step (b), the nested oligonucleotide having a first portion that anneals to the second end of the polynecleotides, and a second portion having a hairpin structure;

e) Extending the polynucleotides synthesized in step (b) to provide an extended polynucleotide comprising a portion that is complementary to the hairpin structure and a terminal portion that is complementary to the predetermined sequence; and

f) amplifying the extended polynucleotides using a single primer having the predetermined sequence.

9) A library as in claim 8 wherein the polypeptides comprise at least a portion of antibodies.